

**PRACTICAL
AUTOMATION
INC.**

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INSTRUCTION MANUAL

MP MASTER



MA23712

P**A**

Trap Falls Road, Shelton, Connecticut 06484

PRACTICAL AUTOMATION, INC.

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MODUPRINT INSTRUCTIONS

INSTRUCTION MANUALMODEL NUMBER A4-274SERIAL NUMBER 021107OPERATING VOLTAGE 24



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MODUPRINT INSTRUCTIONS

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I MOUNTING INSTRUCTIONS

1. Refer to the Cutout and Mounting Hole Location FIG. 1.

NOTE: Observe these dimensions carefully as failure to locate holes properly will result, upon mounting the box, in distortion and consequent poor fit of printer.

2. #6-40 100° FHMS are supplied.
3. Loosen the Mounting Bracket Retaining Nuts.
4. Remove the Printer Assembly from the case.
5. Insert the Case into the Panel Cutout from the rear.
6. Fasten the Case to the Mounting Panel with the FHMS.
7. Adjust the Mounting Brackets so that the front of the Case is absolutely flush and square with the Front Surface of the Mounting Panel.
8. Make necessary electrical connections to the Printed Circuit Board Receptacle at the rear of the Enclosure making absolutely certain that correct polarity is observed and that the positive and negative tabs are not shorted. Failure to observe this caution will destroy transistors if a Basic Control is installed.

FIG. 1

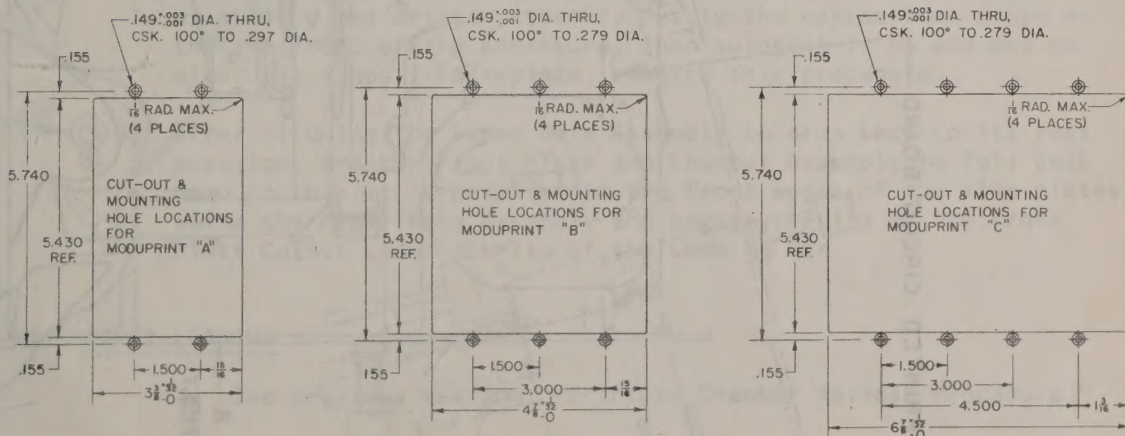
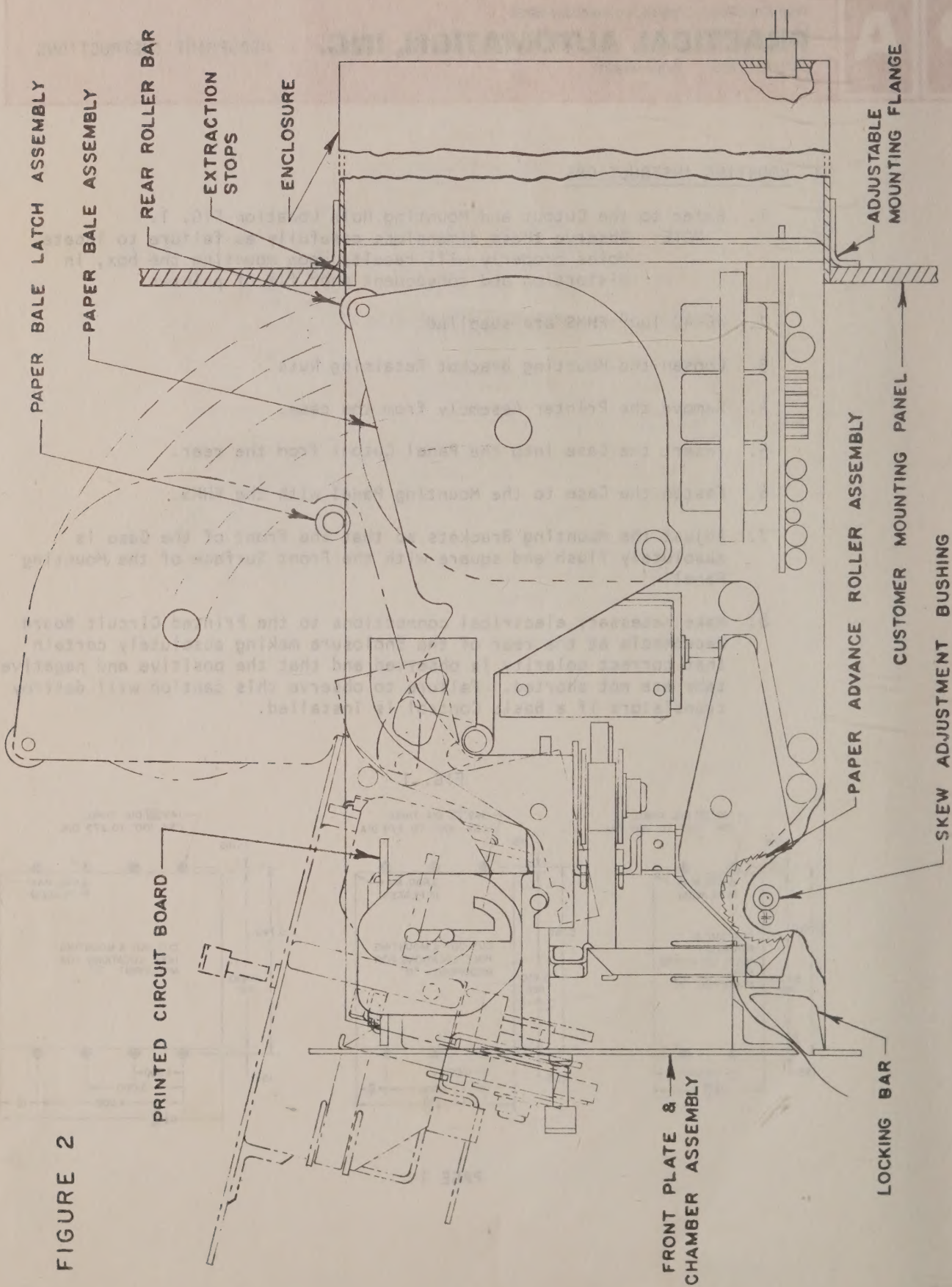


FIGURE 2



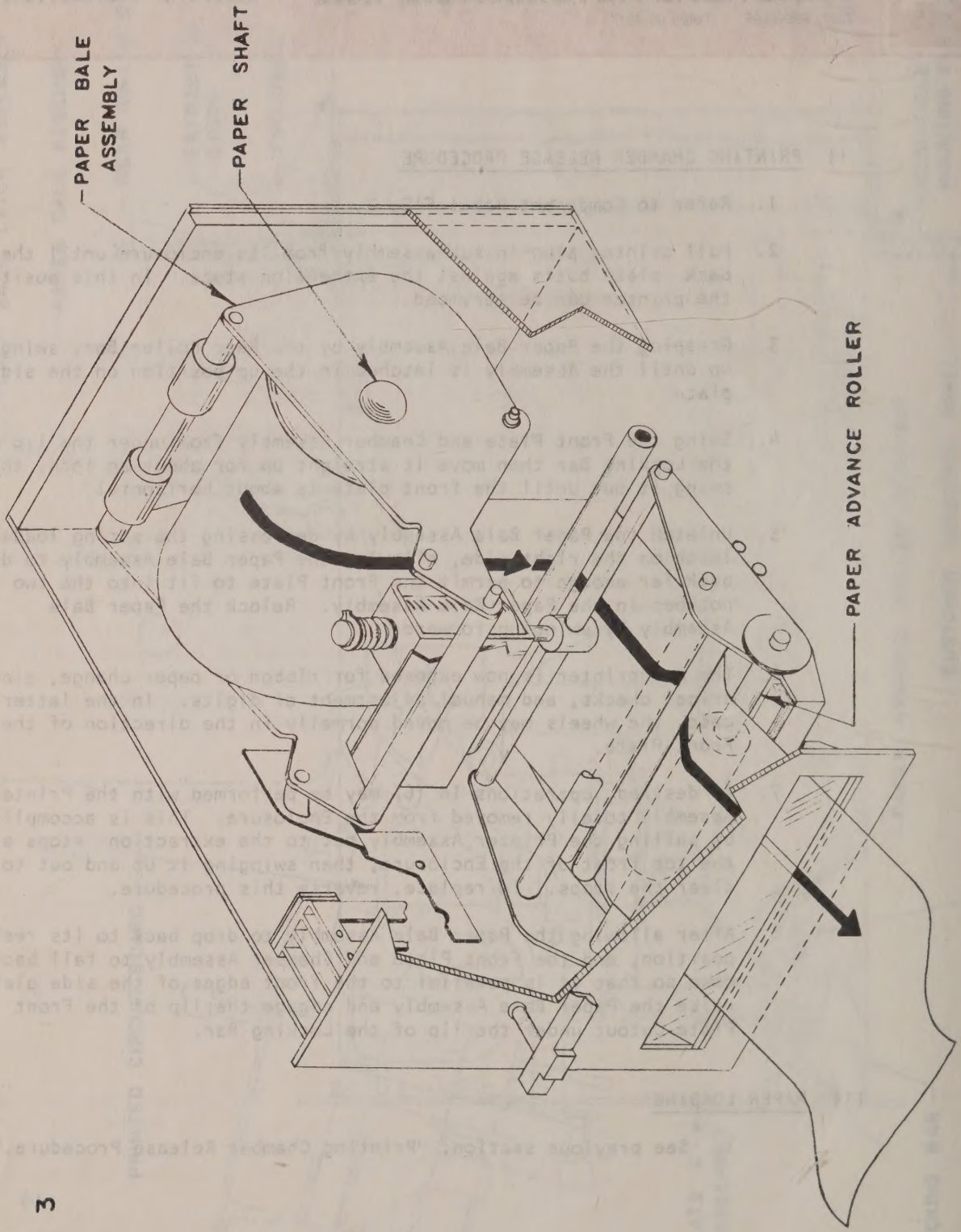
11 PRINTING CHAMBER RELEASE PROCEDURE

1. Refer to Component Parts FIG. 2.
2. Pull printer plug-in sub-assembly from its enclosure until the back plate butts against the extraction stops. In this position the printer can be serviced.
3. Grasping the Paper Bale Assembly by the Rear Roller Bar, swing up until the Assembly is latched in the up position on the side plate.
4. Swing the Front Plate and Chamber Assembly from under the lip of the Locking Bar then move it straight up for about an inch, then swing it out until the front plate is about horizontal.
5. Unlatch the Paper Bale Assembly by depressing the spring loaded latch on the right side, allowing the Paper Bale Assembly to drop back far enough to permit the Front Plate to fit into the two notches in the Paper Bale Assembly. Relock the Paper Bale Assembly by swinging forward.
6. The Moduprinter is now exposed for ribbon or paper change, electrical checks, and manual adjustment of digits. In the latter case, the wheels may be moved normally in the direction of the Front Plate.
7. If desired, operations in (6) may be performed with the Printer Assembly totally removed from the Enclosure. This is accomplished by pulling the Printer Assembly out to the extraction stops at the top front of the Enclosure, then swinging it up and out to clear the stops. To replace, reverse this procedure.
8. After allowing the Paper Bale Assembly to drop back to its rest position, and the Front Plate and Chamber Assembly to fall back down so that it is parallel to the front edges of the side plates, raise the Paper Bale Assembly and engage the lip of the Front Plate Cutout under the lip of the Locking Bar.

111 PAPER LOADING

1. See previous section, "Printing Chamber Release Procedure."

FIGURE 3





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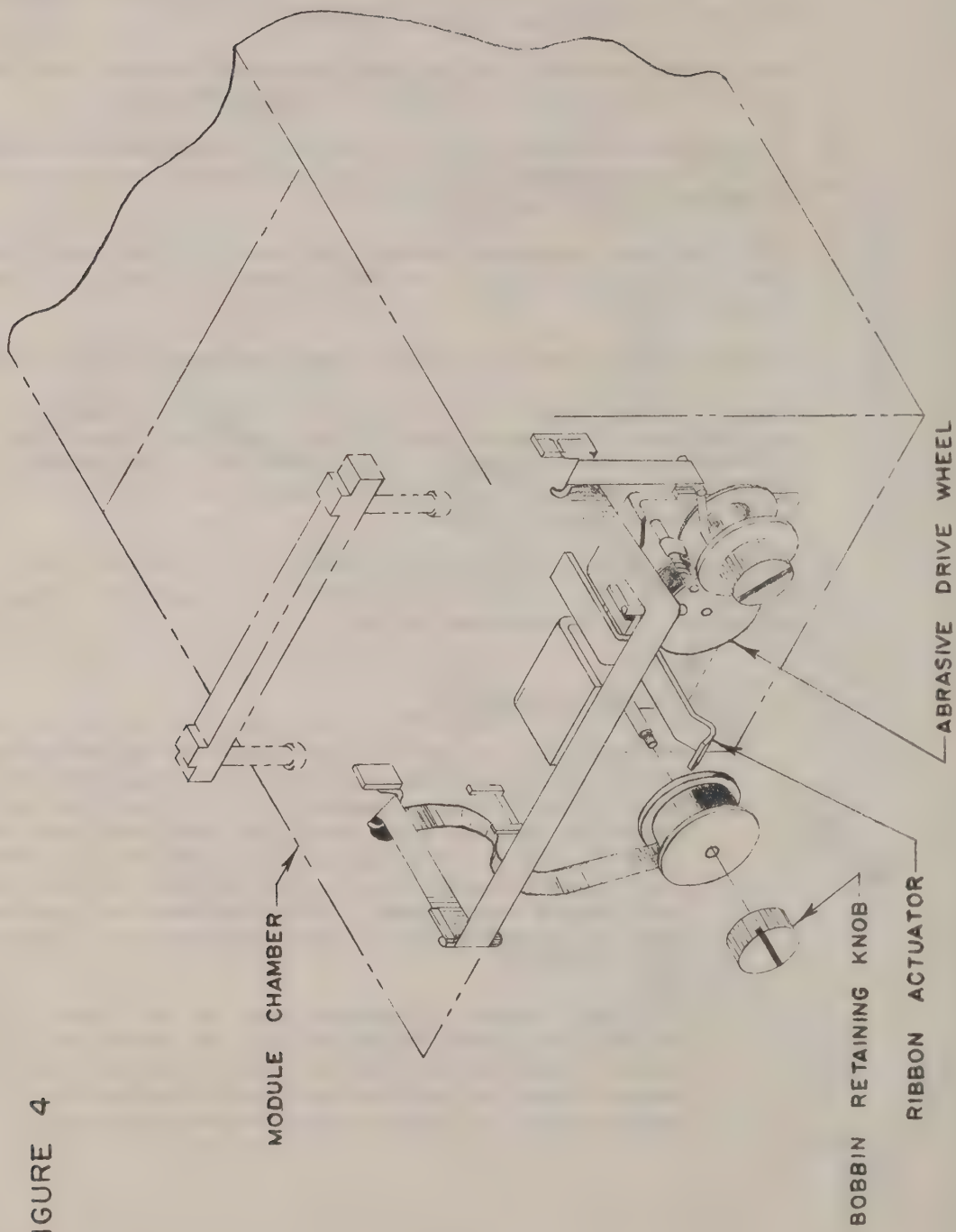
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2. With Paper Bale Assembly up, extract the Paper Shaft, removing old core. Reload with new roll as per Fig. 3.
3. Note: check carefully to see that Paper Roll rotates freely on shaft. This is essential for proper paper advance.
4. Thread paper, following path on Fig. 3. This will be facilitated by folding the leading edge of the paper into an arrow and then creasing up two inches behind the Tip.
5. With the paper extending through the Cutout in the Front Plate and held taut, allow the Paper Bale Assembly to drop into operating positions.
6. Make sure that the Front Plate properly engages the Locking Bar.
7. Push the Frame back into the Enclosure until the rubber rollers on the Paper Bale Assembly are inside, exerting pressure to lock up the Front Plate solidly. This roller bar is adjustable. Ideally, it should project over the top of the side plate 1/16" when free of the Enclosure.
8. In this position, depress and release the Solenoid manually a dozen or so times. This will cause print and advance the paper to ensure that loading was correct.

A. PRINT SPACING ADJUSTMENT

1. If paper does not advance with adequate separation between lines, there may be inadequate pressure on the paper from the Paper Advance Roller. Adjust the two eccentric bearings (SKEW ADJUSTMENT BUSHINGS) that support this roller to produce the desired tension. These Bearings also control Paper Skew and must be adjusted relative to one another. This adjustment can only be made with pressure continuously exerted on the Paper Bale Assembly.
2. The ideal tension to advance paper is: for Moduprint A, 4-5 oz., for Moduprint B, 6-7 oz., for Moduprint C, 9-10 oz. This can be measured by attaching an ounce Dynamometer Gauge to the leading edge of the paper, and measuring pull at right angles to the Front Plate.

FIGURE 4



IV REPLACEMENT OF RIBBON

1. See section II, "Printing Chamber Release Procedure."
2. With Module Chamber in open, or horizontal position, remove Bobbin Retaining Knobs.
3. Swing abrasive drive wheel against the smaller Diameter Bobbin. Ribbon may have to be wound manually onto the fullest Bobbin to achieve sufficient clearance for next step.
4. With larger Bobbin removed, swing abrasive drive wheel to empty side.
5. Remove remaining Bobbin in same manner. Do not remove the tension springs on the shafts.
6. To install new ribbon, reverse the procedure described above, following the ribbon path in FIG. 4.
7. Manually depress the Ribbon Actuator several times to take up slack, and to ensure that new ribbon is not snagged.
8. With Front Plate back in operating position and Frame partly back in Enclosure, depress the Solenoid several times observing that Ribbon Bobbins are advancing.

V INTERCHANGE OF COUNTING MODULES

1. Remove printer assembly from main chassis.
2. Grasp printed circuit board and pull up, rocking board slightly to free it from the Count Module connecting socket into which it is plugged.
3. Remove Module Locking Bar.
4. Modules can now be lifted out of their slot for rotation between the lower order digits with the higher order digits for increased overall operating life or if necessary replacement.
5. Replace the Locking Bar, depressing the bar as much as possible and Printed Circuit Board, taking great care that receptacles are squarely aligned with their appropriate connector pins before applying the firm pressure required to properly seat the board.

VI ELECTRICAL CHARACTERISTICS**1. Count Module Data: (when installed in printer with suppression)****12VDC Operating Specifications**

Voltage	12VDC + 10%-0
Current	218 MA
Max. speed	40 ips
Min. ON time	12.5 millisec.
Max. ON time	30 seconds
Min. OFF time	12.5 millisec.

24VDC Operating Specifications

Voltage	24VDC + 10%-0
Current	109 MA
Max. speed	40 ips
Min. ON time	12.5 millisec.
Max. ON time	1 minute
Min. OFF time	12.5 millisec.

24VDC Operating Specifications

Voltage	24VDC + 10%-0
Current	260 MA
Max. speed	80 ips
Min. ON time	6.25 millisec.
Max. ON time	30 seconds
Min. OFF time	6.25 millisec.

48VDC Operating Specifications

Voltage	48VDC + 10%-0
Current	54 MA
Max. speed	40 ips
Min. ON time	12.5 millisec.
Max. ON time	1 minute
Min. OFF time	12.5 millisec.

2. Print Solenoid Data: (installed with full suppression)**12VDC Operating Specifications**

Frame size A	1.9 amps
B	3.4 amps
C	3.4 amps
Duty cycle	25%
Min. ON time	80 millisec.
Max. ON time	1 minute

24VDC Operating Specifications

Frame size A	.9 amps
B	1.6 amps
C	2.0 amps
Duty cycle	25%
Min. ON time	80 millisec.
Max. ON time	1 minute

48VDC Operating Specifications

Frame size A	.4 amps
B	.8 amps
C	1.2 amps
Duty cycle	25%
Min. ON time	80 millisec.
Max. ON time	1 minute



3. Basic Control Data:

A simplified block diagram illustrating the basic elements of the circuit is shown, FIG. 5 and schematically in FIG. 6. The Basic Control is fundamentally a pulsing source required for group reset of count modules in the Moduprint. Associated with the solid state drive section is a rack of relays that permits selective resets of groups and controls the status of the oscillator via diode D1.

- A. The oscillator consists of two transistors Q1 and Q2 cross-coupled with positive feedback to cause square wave oscillation. Resistors R1, R2 and Capacitors C1 and C2 are adjusted to produce a wave with 50% duty cycle at a rate compatible with the specific count modules used.
- B. The output of transistor Q2 from its load resistors drives the base of the emitter follower output stage (transistor Q3). The output of this amplifier is tied via base resistors to the base of the driver transistors (Q4, Q5, Q6 and/or Q7).
- C. A time delay after print, necessary for automatic reset of data after print, is performed by charging a capacitor through the base of a transistor. The output of this transistor is tied directly to a relay.

4. Optional Features:

- A. Automatic index after print.

External jumper by you from output of differentiator (auto) to the input (data) of the desired group of count modules.

- B. Automatic reset after print.

External jumper by you from output of differentiator (auto) to input (reset) of the desired group or groups of count modules.

VII POWER SUPPLY REQUIREMENTS

Proper functioning of this instrument depends on an adequate power supply with a Line and Load regulation consistent with the voltage tolerances given above for the Count Modules. A maximum ripple of 100 millivolts is also essential especially when the Basic Control is installed.



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VIII CAUTIONS

Due to the extremely fast response of the Count Modules, the driving circuitry must be selected with care. In particular, if switch contacts are used, especially snap switches, the bounce associated with the closures must be minimized to assure that the Count Module does not count stray bounce as data.

Although arc suppression is built into each Moduprint, driving switches may also be used to activate circuitry in parallel with the Count Modules. If this type of application threatens arc erosion difficulties, send to Presin Co., Trap Falls Road, Shelton, Connecticut for bulletins on economical arc suppression RC networks.

It should be repeated that when the Basic Control is installed, polarity must be observed. Reversal of polarity, or shorting of power input leads will damage the transistors. Please take special care.

When the Basic Control is set for automatic print and reset power interruption will arm the differentiator so that when power is restored automatic reset of stored data will result. The reset is not so triggered when the two functions are separated.

IX WARRANTY

Practical Automation, Inc. warrants each new Moduprint to be free from defects in material and workmanship. Our responsibility is limited to repairing or replacing any instrument or part thereof for a period of one year after shipment when, in our opinion, the repair or replacement is covered by the warranty. When the instrument is not so covered we will repair it at standard rates. Under no circumstances should an instrument be returned without our authorization.

Any instrument being returned for repair or replacement must be returned in its enclosure and fully packed with resilient material to isolate it from the sides of the container. Repair costs will be minimized if model and serial numbers as well as a full description of the experienced difficulties are discussed in both the covering repair order and on a tag attached to the instrument itself.

IMPORTANT: Factory responsibility is void if unit is not returned in enclosure.

This is an order ☐ Order No. _____ This is a Request for Quotation ☐ R.F.Q. No. _____

Company Name _____ Date _____ Telephone _____

Street _____ By _____

City, State _____ Zip Code _____

The following CODE should be carefully followed for both quotations and orders. See Bulletin 610 for specific information on Count Modules; Bulletin 625 for Wheel Library.

1. = Digit space unoccupied by count Module
2. = Digit space occupied by Count Module or wired to accept Count Module
3. = A digit space occupied by Count Module with Wheel A (See Wheel Library)
4. = As 3 above, but with zero reset switch
5. = As 3 above, but with transfer switch
6. = As 3 above, but with transfer and zero reset switches
7. = Count Modules in parallel operation
8. = Count Modules in serial counting operation
9. = Count Modules in serial & parallel operation (available to limit of connector positions)
10. = Common reset of group
11. = Common reset of separate group
12. = index advancing one count per print command and with separate reset
13. = Automatic reset of group after print

SPECIFICATIONS

FRAME	CAPACITY DIGITS	DIGIT PITCH	PAPER ROLL WIDTH	MAXIMUM RESET GROUPS
Moduprint A	9	.285"	2 1/2"	2
Moduprint B	14	.285"	4"	3
Moduprint C	20	.285"	6"	4

EXAMPLE MODUPRINT C



The above is a Moduprint C frame equipped with 13 digits in spaces selected by the purchaser. From left to right: 2 spaces, a 2-digit serial counter used as an index, 1 space, a 4-digit serial counter indicating HOURS and MINUTES, 1 space, a 4-digit serial counter, 1 space, 3 digits of parallel entry, 2 spaces. There are 4 groups for resetting.

TO BE COMPLETED BY CUSTOMER

1. If no Count Module is desired in position, DO NOT fill.
2. Position in available location on diagram will determine actual position of print on paper.

MODUPRINT A
Quantity _____

MODUPRINT B
Quantity _____

MODUPRINT C
Quantity _____

THE FOLLOWING INFORMATION IS ALSO REQUIRED

COUNTING RATE 40 c/s 12V DC ☐ or 24V DC ☐ or 48V DC ☐ 80 c/s 24V DC (Parallel only) ☐

BASIC CONTROL FOR STANDARD COUNT MODULES INCLUDE ☐ DO NOT INCLUDE ☐

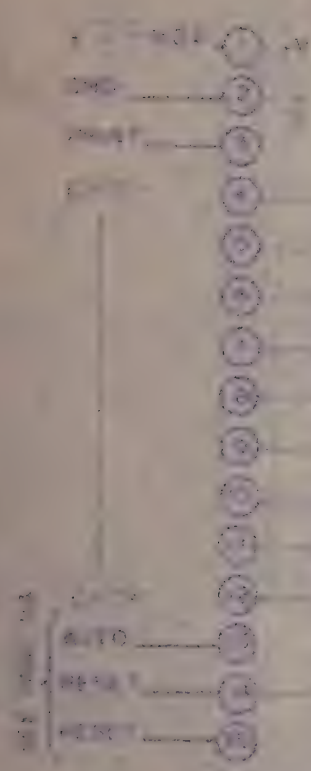
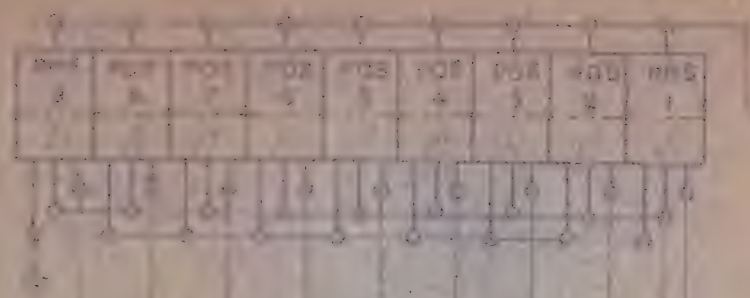
DATA LOCKOUT DURING PRINT INCLUDE ☐ DO NOT INCLUDE ☐

TIME LOCKOUT DURING PRINT INCLUDE ☐ DO NOT INCLUDE ☐

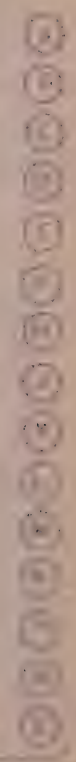
or PRINT LOCKOUT DURING DATA & TIME, INCLUDE ☐ DO NOT INCLUDE ☐ (Qualified-Contact Factory)

FIG. 10

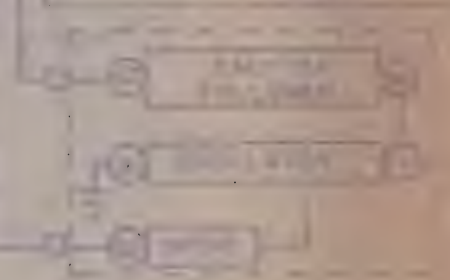
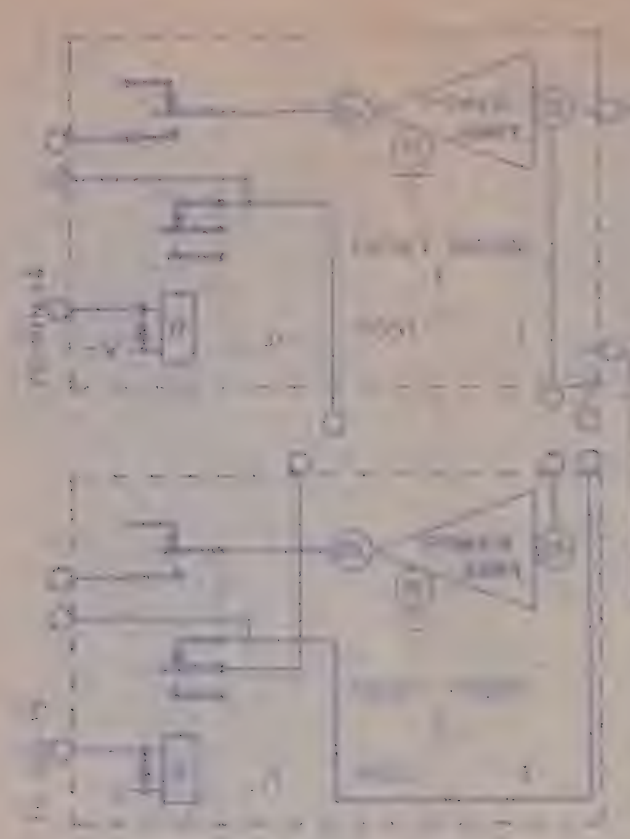
WIRE NO.
1
2
3
4



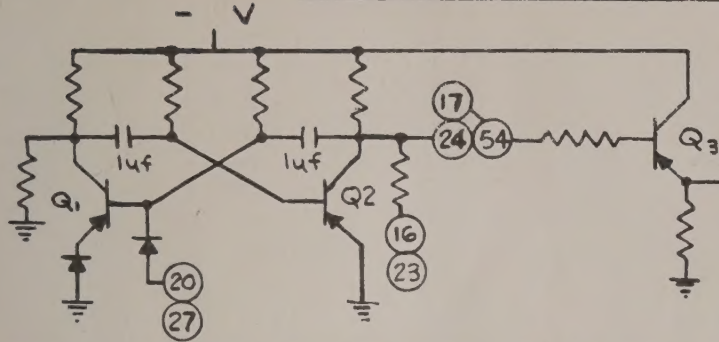
WIRE CONNECTION



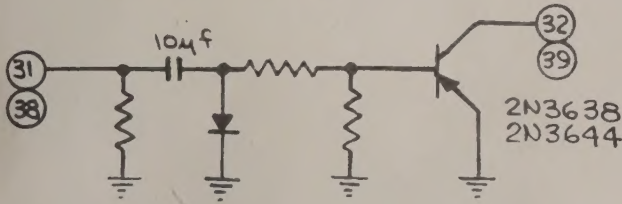
BRIDGEPORT, CO.
 SCHEMATIC
 FREQ. $\frac{1}{2}$ Hz
 ALL COMPONENTS MUST BE
 APPROVED BY THE



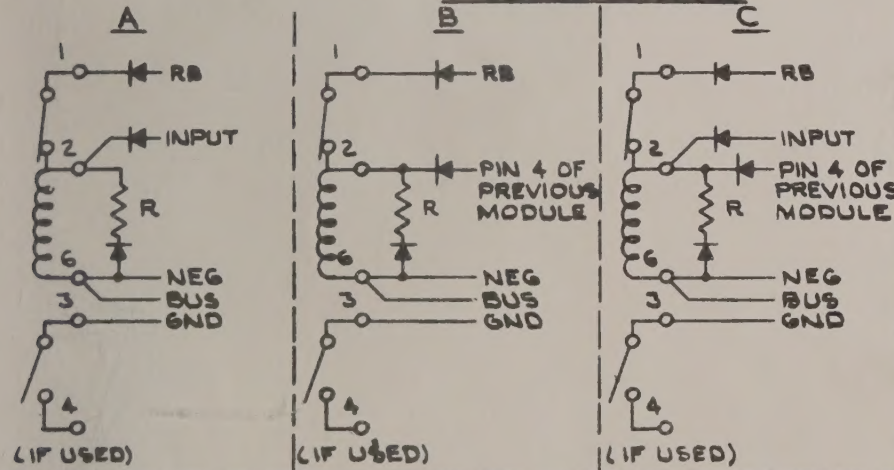
BASIC CONTROL



DIFFERENTIATOR



MODULE WIRING



- Q₁, Q₂ → 2N404A
- Q₃ → 2N3638
2N3644
- Q₄, Q₅ } → 2N3614
- Q₆, Q₇ }
- ALL DIODES
.750A @ 150 PIV

SUPPRESSION RESISTOR TABLE

V	CP5	SW	Ω
24	40	ALL	150
24	80	ZT	47
12	40	ALL	15
24	80	Z	100
48	40	ALL	270

ELECTRICAL COMPONENTS DWG

BASIC CONTROL ☐ INCLUDED DATE 4-274 SCHEMATIC

☒ NOT INCLUDED

